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Manifestation of cluster effects in the structure of actinides

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Abstract

© 2016 Owned by the authors, published by EDP Sciences.We developed a cluster model which allows to take into account both shape deformation parameters and cluster degrees of freedom. The model is based on the assumption that the wave function of nucleus can be treated as a superposition of a mononucleus and two-cluster configurations. The model is applied to describe the multiple negative-parity bands in deformed actinides. Special emphasis is made on the investigation of the recently measured positive parity 0+2 rotational band of reflection-asymmetric nature in 240Pu. The results suggest that this band might be understood as the one built on the lowest excited state in mass asymmetry degree of freedom.

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